FIVE YEAR LIMITED WARRANTY PROGRAM

This limited warranty program is the only one that applies to this product, and it sets forth all the responsibilities of Vector Manufacturing, regarding this product. There is no other warranty, other than those described herein.

This Vector Manufacturing product is warranted, to the original purchaser only, to be free of defects in materials and workmanship for five years from the date of purchase without additional charge. The warranty does not extend to subsequent purchasers or users. Manufacturer will not be responsible for any amount of damage in excess of the retail purchase price of the product under any circumstances. Incidental and consequential damages are specifically excluded from coverage under this warranty.

This product is not intended for commercial use. This warranty does not apply to accessories or damage to units from misuse or incorrect installation. Misuse includes wiring or connecting to improper polarity power sources.

RETURN/REPAIR POLICY: Defective products, other than accessories, may be returned postage prepaid to manufacturer. Any defective product, other than accessories, that is returned to manufacturer within 30 days of the date of purchase will be replaced free of charge. If such a product is returned more than 30 days but less than five years from the purchase date, manufacturer will repair the unit or, at its option, replace it free of charge.

If the unit is repaired, new or reconditioned replacement parts may be used, at manufacturer's option. A unit may be replaced with a new or reconditioned unit of the same or comparable design. The repaired or replaced unit will then be warranted under the terms of the remainder of the warranty period. The customer is responsible for the shipping charges on all returned items after 30 days. During the warranty period, manufacturer will be responsible for the return shipping charges.

LIMITATIONS: This warranty does not cover accessories, bulbs, fuses and batteries, defects resulting from normal wear and tear (including chips, scratches, abrasions, discoloration or fading due to usage or exposure to sunlight), accidents, damage during shipping to our service facility, alterations, unauthorized use or repair, neglect, misuse, abuse, failure to follow instructions for care and maintenance, fire, flood and Acts of God.

If your problem is not covered by this warranty, call Technical Support at (800) 618-5178 for general repair information and charges, if applicable. You may also contact us through our website at www.vectormfg.com.

STATE LAW RIGHTS: This warranty gives you specific legal rights. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the exclusions or limitations stated herein may not apply. This warranty gives the purchaser specific legal rights; other rights, which vary from state to state, may apply.

TO REQUEST WARRANTY SERVICE FOR THIS PRODUCT: Contact Technical Support by telephone, fax or mail (see below). We suggest that you keep the original packaging in case you need to ship the unit. When returning a product, include your name, address, phone number, dated sales receipt (or copy) and a description of the reason for return and product serial number. After repairing or replacing the unit, we will make every effort to return it to you within four weeks.

WARRANTY ACTIVATION: Please complete Warranty Activation Card and mail to Vector Manufacturing. Enter "VEC1087CBD" as Model and "10/6/2 Amp Smart Battery Charger" as Product Type. All Vector products must be registered within 30 days of purchase to activate this warranty. Mail the completed registration form, along with a copy of the original sales receipt to:

ATTN.: CUSTOMER SERVICE
4140 SW 30th Ave., Ft. Lauderdale, FL 33312
• TOLL FREE: (800) 618-5178 • FAX: (954) 584-5556 •

WARRANTY IS NON-TRANSFERABLE AND NON-REFUNDABLE.

BD050205

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MADE IN CHINA

VEC1087CBD

BLACK&DECKER®

Fully Automatic Electronic
Smart Battery Charger
10 Amp / 6 Amp / 2 Amp Charge Rates

c UL US

USER'S MANUAL & WARRANTY INFORMATION

IMPORTANT SAFETY INFORMATION, SAVE THESE INSTRUCTIONS

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND THIS INSTRUCTIONAL MANUAL. THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE OPERATION AND WARRANTY OF THIS PRODUCT. PLEASE RETAIN FOR FUTURE REFERENCE.

4140 S.W. 30th Ave., Ft. Lauderdale, FL 33312 U.S.
Toll Free: (800) 618-5178

www.vectormfg.com

IMPORTANT SAFETY INSTRUCTIONS

WARNINGS

1. **RISK OF EXPLOSIVE GAS MIXTURES — WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**
2. **To reduce risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products and on engine.**
3. **This equipment employs parts (switches, relays, etc.) that produce arcs or sparks. Therefore, if used in a garage or enclosed area, the unit MUST be placed not less than 18 inches above the floor.**

Battery Safety

1. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
2. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
3. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock, and will void warranty.

   If an extension cord must be used, make sure:

   a. that pins on plug of extension cord are the same number, size, and shape as those of plug on charger;

   b. that extension cord is properly wired and in good electrical condition; and

   c. that wire size is AWG#14 (14 gauge) for 100 feet and AWG#12 for distances over 100 feet.
4. Do not operate charger with damaged cord or plug — take to a qualified technician for replacement of the plug or cord immediately.
5. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service technician.
6. Do not disassemble charger; take it to a qualified service technician when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire, and will void warranty.
7. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls without unplugging will not reduce this risk.
8. Do not expose charger to rain, snow or use when wet.

Personal Safety

1. Another person should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
2. Fresh water and soap should be nearby in case battery acid contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working with a battery. Acid, acid particles or corrosion may get into eyes. Immediately flood eye with cold water (Eye Wash Station) for at least 15 minutes and seek medical attention immediately.
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If redness, pain or irritation occurs, seek immediate medical attention.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. Be extra cautious to reduce the risk of dropping a metal tool onto battery. This might cause sparks or short-circuit the battery or other electrical part, which can cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to cause a severe burn.
8. Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low-voltage electrical system other than in a starter-motor application. Do not use the battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage property.
9. NEVER ATTEMPT TO CHARGE A FROZEN BATTERY.

Power Cord Safety

This appliance has a polarized plug (one blade is wider than the other) as a safety feature. This plug will fit into a polarized outlet only one way. If the plug does not fit fully into the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not attempt to defeat this safety feature.

Preparing to Charge

1. Determine voltage of battery to be charged by referring to the vehicle manual.
2. If it is necessary to remove battery from vehicle to charge, or to clean terminals, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
3. Clean battery terminals. Do not allow corrosion to come in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps (maintenance free), carefully follow manufacturer's charging instructions.
5. Study all battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, and recommended rates of charge.
6. Area around battery should be well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
7. Make sure the initial charging rate does not exceed battery manufacturer's requirement.

Charger Location

1. Locate charger as far away from battery as cables permit.
2. NEVER place charger directly above battery being charged; gases from battery will corrode and damage charger.
3. NEVER allow battery acid to drip on charger when reading gravity or filling battery.
4. NEVER operate charger in a closed-in area or restrict ventilation in any way.
5. Marine batteries must be removed and charged on shore.
6. Do not set a battery on top of charger.

DC Connection Precautions

1. Connect and disconnect DC output clamps only after removing AC cord from electric outlet.
2. Never allow clamps to touch each other.
3. Attach clamps to battery post and chassis as indicated in "Battery Installed in Vehicle" steps 5 and 6, and in "Battery Outside of Vehicle" steps 2, 4 and 5.

Follow these steps when the battery is installed in a vehicle. A spark near the battery may cause an explosion. To reduce risk of a spark near the battery:

1. Position AC and DC cords to reduce risk of damage by hood, door, or moving engine part.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
3. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, –) post.
4. Determine which post of battery is grounded (connected) to the chassis. If NEGATIVE post is grounded to chassis (as in most vehicles), see 5. If POSITIVE post is grounded to the chassis, see 6.
5. For negative-grounded vehicle, connect POSITIVE (RED) clamp from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to heavy gauge metal part of the frame or engine block.
6. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from battery charger to NEGATIVE (NEG, N, –) ungrounded post of battery. Connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
7. When disconnecting charger, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.
8. Do not charge the battery while the engine is operating.
9. See operating instructions for length of charge information.

Follow these steps when the battery has been removed from a vehicle. A spark near the battery may cause an explosion. To reduce risk of a spark near the battery:

1. Check polarity of battery posts. POSITIVE post (marked POS,P, +) usually has a larger diameter than the NEGATIVE battery post (marked NEG, N, –).
2. Attach a 24-inch (minimum length) 6 AWG insulated battery cable to the NEGATIVE battery post (marked NEG, N, –).
3. Connect the POSITIVE (RED) battery clamp to the POSITIVE battery post (marked POS, P, + or red).
4. Stand as far back from the battery as possible, and do not face battery when making final connection.

5. Carefully connect the NEGATIVE (BLACK) charger clamp to the free end of the battery cable connected to the NEGATIVE terminal.
6. Set the charge rate to appropriate setting according to battery size.
7. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.

Note: ***A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use. This unit is NOT designed for such use.***

SAVE THESE INSTRUCTIONS

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. This limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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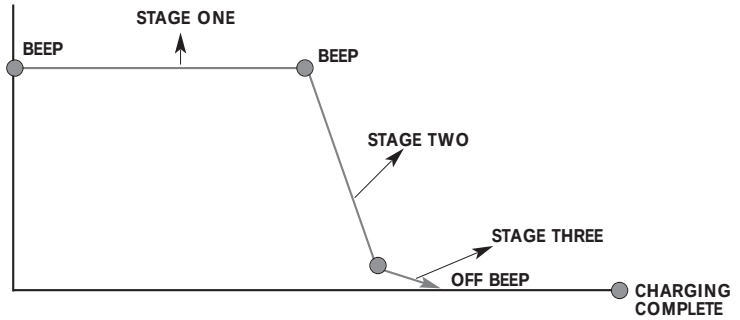
INTRODUCTION

Thank you for selecting the ***Black & Decker 10/6/2 Amp Smart Battery Charger.*** With proper care and use, it will give you years of dependable service. This battery charger has a high charge rate of up to 10 amps, and low charge rate of up to 2 amps. It is designed for charging only 12 volt lead-acid batteries — conventional automotive, maintenance-free, marine deep cycle and gel — used in cars, trucks, farm equipment, boats, RVs and SUVs, lawn mowers/garden tractors, motorcycles, personal watercraft, snowmobiles, ATVs and various applications.

Smart Battery Chargers feature 3-stage, high-efficiency charging technology, built-in microprocessor control that ensures fast, safe and complete charging of serviceable batteries.

Charge Curve



Stage One — Rapid Start Charge at 10 amps delivers maximum charging amperage to “wake up” any serviceable 12 volt battery and allows for quick engine starting in just 5 minutes (based on a midsize vehicle battery at 50% charge level). When battery reaches a maximum safe predetermined voltage, the charger will automatically signal a "beep" and move into Stage 2 of the charging process.

Stage Two — Absorption Charge maintains the maximum possible charge at a constant, safe, predetermined voltage. During this phase, the charging voltage remains constant, while the actual charging current is reduced to allow for the maximum proper internal chemical energy transfer. At the end of Stage 2, the charger will automatically move into Stage 3 charge mode.

Stage Three — Top-Off Charge voltage is automatically maintained and reduced to a predetermined level while current is adjusted for a safe, effective battery charge. At the conclusion of Stage 3, the unit will BEEP signaling the completion of the charging cycle.

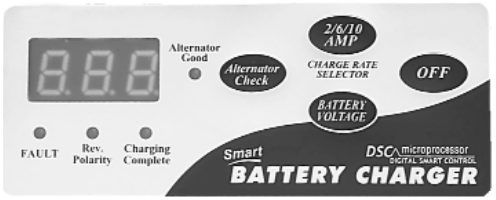
The Automatic Float Charge feature is ideal for maintaining a battery. It automatically tops off battery as needed, to keep battery fully charged all the time.

FEATURES

- This unit has three charge rate settings, accessed by the 2/6/10 AMP button:
  a) 2 amps: smaller batteries, as in lawn mowers, snowmobiles, motorcycles, etc.
  b) 6 amps: mid-sized batteries, as in small cars
  c) 10 amps: automobiles and light trucks
- Automatic float charge monitoring
- Microprocessor controlled for proper operation and fault detection.
- Large, lighted digital display shows charging current, codes that indicate faults, modes of operation and time-out of functions
- High-frequency, switch-mode operation for pure DC output
- Rapid charging three stage output
- Heavy-duty cables and clamps are corrosion-resistant
- Connect to side or top-mount battery terminals
- Rugged case, plus sturdy carry handle
- Self-storage of cables and clamps
- Ideal during winter season when vehicle's starting performance is reduced by cold or extreme weather conditions
- Single beep tone indicates a button is pressed or a mode change occurs
- Alternator check can determine if alternator output is within a typical voltage range

Controls and Indicators

CONTROL PANEL



DIGITAL READOUT CIRCULATING PATTERN

FUNCTION BUTTONS (FROM RIGHT TO LEFT CLOCKWISE):

Alternator Check — is a five-second check that measures the battery voltage. This check is repeated at various electrical load levels and the tests allow the user to determine if the alternator can keep up with the loads. It can indicate whether alternator service may be required.

2/6/10 AMP — allows the user to select the charge rate based on battery size. This selection and actual battery charge rate are monitored by the microprocessor and will stop charging if the selected rate is too fast or too slow for battery size or condition.

OFF — prepares the charger to be placed in any of the operating modes. Pressing the OFF button immediately stops any operating mode and the display shows the circulating pattern.

BATTERY VOLTAGE — enables a check that measures the battery voltage and displays it for 3 seconds.

INDICATORS:

Large (.375") 3-Character Digital Display in the upper left of the control panel indicates the various conditions and/or status codes:

Status Codes are described in the following chart and on back of the charger.

AC POWER INDICATOR - *When connected to an AC outlet, digital display shows circulating pattern to indicate power is on. Disconnect charger after use.*

FAULT CODES

F01	**INTERNAL SHORTED CELL BATTERY -** *Cannot be charged. Have battery checked by certified auto service center.* **EXCESSIVE LOAD ON BATTERY WHILE CHARGING -** *Check load.*
F02	**BAD BATTERY CONNECTION -** *Check battery connection.* **BATTERY VOLTAGE TOO LOW TO ACCEPT CHARGE -** *Have battery checked by certified auto service center.*
F03	**INTERNAL OPEN CELL/ SULFATED CONDITION -** *Have battery checked by certified auto service center.*
F04	**OVERTIME CONDITION -** *Battery will not accept a charge after 18 hours of continuous charging. Battery may have internal damage. Have battery checked by certified auto service center.* **BATTERY CHARGE RATE IS SET TOO LOW -** *Set charger to higher charge rate. See manual.*
F05	**OVERHEATED CONDITION -** *Disconnect charger and allow to cool for 30 min., check for ample ventilation.*

OPERATION CODES

---	ALTERNATOR VOLTAGE CHECK
000	CHARGER STANDBY
FUL	BATTERY FULLY CHARGED
FLO	BATTERY IN FLOAT MODE

CONTROL PANEL LED INDICATORS:

Alternator Good — Lights when load or no load checks show the alternator is keeping up with the electrical load.

FAULT — lights when any of several faults are detected — see F01 through F05 Codes as described in the previous chart. If the Fault LED lights (refer to "Troubleshooting" for details.)

Rev. Polarity — lights when clamps are incorrectly connected to battery terminals.

Charging Complete — indicates battery is charged. Charging Complete LED lights at same time the digital display shows "FUL".

OPERATING INSTRUCTIONS

Ensure that all installation and operating instructions and safety precautions are understood and carefully followed by anyone installing or using the charger. Follow the steps outlined in "Important Safety Instructions" at the front of this manual.

Charge Rate Selection

After charger clamps are correctly connected, plug in the charger to a 120 volt AC outlet and the charger will show a circulating pattern on the Digital Display, indicating power has been applied. Select the proper charge current rate based on battery size.

⚠ WARNING

If Digital Display shows "F02" and the Fault indicator lights, the connection to the battery terminals is bad. Follow the steps outlined in "Important Safety Instructions" at the front of this manual.

If Rev. Polarity indicator also lights, the RED (POSITIVE) and BLACK (NEGATIVE) clamps are incorrectly connected to battery terminals. Follow the steps outlined in "Important Safety Instructions" at the front of this manual.

Charging the Battery

1. Press 2/6/10 AMP button to begin charging at the 2 amp rate; the unit sounds a beep and the charging current LED lights. The charger starts charging at 2 amp rate automatically if 2/6/10 AMP button is not pressed within 3 minutes after applying AC power.

   Charger occasionally sounds a beep and displays "0.0" during self-test or charging stage changes.
2. Pressing the 2/6/10 AMP button again advances charging rate to 6 amps and pressing once more advances charging rate to 10 amps. (Pressing the button again will turn OFF the charger output and the Display will show "000".) This selection and actual battery charge rate are monitored by the microprocessor and the unit will stop charging if the selected rate is too fast or too slow for battery size or condition.

   As the battery nears full charge capacity, the unit's output will automatically drop to a lower charge rate.
3. The battery charger displays the charge current. To view the battery voltage, press BATTERY VOLTAGE button. The charger will sound a beep and display the battery voltage for 3 seconds, then returns to displaying the charge current.
4. The display shows "FUL" and the Charging Complete LED lights when the battery is fully charged.
5. Disconnect the AC power cord first, then the NEGATIVE clamp, and finally the POSITIVE clamp.

Automatic Float Charging

Automatic Float Charging is ideal for maintaining a fully charged battery.

1. Keep the AC power and battery connected after battery is fully charged.
2. The charger monitors the battery and tops it off as needed.
3. The display shows "FLO" when topping off the battery and returns to "FUL" when completed.
4. To view battery voltage, press the Battery Voltage button.

Note: Charging can be terminated by pressing OFF button at any time.
After AC power interruption, charging restarts at 2 amp rate automatically.

⚠ WARNING

If battery size is not known, charge at the 2 amp rate. DO NOT overcharge batteries.

Alternator Check

Part 1

No Load (Turn OFF all vehicle's accessories): The battery must be fully charged before testing the alternator. Run the engine long enough to achieve normal idle speed and verify there is a no-load voltage.

1. Press Alternator Check to start the check.
2. Alternator Good LED will light to indicate the alternator is good, or the FAULT LED will light to indicate the alternator may need service.
3. Press Alternator Check again to stop the test.

Part 2

Under Load (Accessories ON): Next, load the alternator by turning on as many accessories as possible (except for A/C and DEFROST)

1. Press Alternator Check to start the check.
2. Alternator Good LED will light to indicate the alternator is good, or the FAULT LED will light to indicate the alternator may need service.
3. Press Alternator Check again to stop the test.

If the first alternator check indicates a good alternator and the second indicates the alternator may need service, the problem could stem from: loose fan belts, an intermittent diode failure or possibly bad connections between the battery and alternator and/or ground.

NOTES BATTERY VOLTAGE button is disabled in Alternator Check mode.

The FAULT LED may light because someone has added a number of accessory loads on the charging system, thereby increasing current demand from the alternator. MAKE SURE THAT THE ALTERNATOR IS RATED TO SUPPORT THE APPLICATION.

This check may not be accurate for every make, manufacturer and model of vehicle.

Check only 12 volt systems.

APPROXIMATE CHARGING TIMES

The ***2/6/10 Amp 12 Volt Smart Battery Charger*** will automatically adjust the charge rate as the battery becomes charged, and stop when the battery is fully charged. Deep cycle batteries may require longer charging time.

For estimates of the time it takes to charge a battery, refer to the following table.

Percent of charge in battery	75%	50%	25%	0%
at 2 amp rate	7 HRS	14 HRS	NR*	NR*
at 6 amp rate	2.5 HRS	4.7 HRS	7 HRS	9.2 HRS
at 10 amp rate	1.4 HRS	2.8 HRS	4.2 HRS	5.5 HRS

*NR = Not recommended at 2 amps — use a higher charge rate.

The times shown in the table above are approximate and refer to a 50 Ah automotive battery. For example, a 50 Ah (12 volt) battery is discharged (50%). How long should it be charged at the 10 amp rate? See the chart above under "50%" and "at 10 amp rate."

In most cases, battery charging times will vary depending on the size, age and condition of the battery. Smaller batteries should be charged at a lower rate (2 amps) and an extra hour added to charge time.

CARE AND MAINTENANCE

With proper care and minimal maintenance, the ***2/6/10 Amp 12 Volt Smart Battery Charger*** will provide years of dependable service. For maximum performance, manufacturer recommends:

- After each use, clean the battery charger clamps — be sure to remove any battery fluid that will cause corrosion of the copper clamps.
- Clean the outside case of the charger with a soft cloth and, if necessary, mild soap solution.
- Do not allow liquid to enter the charger. Do not operate when charger is wet.
- Keep the charger cords loosely coiled during storage to prevent damage to the cords.

⚠ WARNINGS

- **Do not use charger if cords or clamps have been damaged in any way — call Technical Support toll-free at (800) 618-5178.**
- **There are no user-serviceable parts in this unit.**
- **Do not open the unit. In the event of malfunction, it must be returned to manufacturer for professional testing and repair. OPENING THE UNIT WILL VOID THE MANUFACTURER'S WARRANTY.**

TROUBLESHOOTING

Display Indications/Common Problems/Possible Solutions

No Functions

- Check and make sure the charger is plugged into a live 110/120 volt AC outlet.
- Follow the steps outlined in the Operating Instructions section.

F01 — Internal Shorted Cell Battery

If the battery being charged has an internal shorted cell, the F01 will show. We recommend taking your battery to a certified automotive service center for evaluation.

F02 — Bad Battery Connection or Battery Voltage Too Low to Accept Charge

When F02 appears, the most common cause is poor connection to battery.

- Follow the steps outlined in "Important Safety Instructions" at the front of this manual to disconnect AC cord and clamps, clean battery terminal and reconnect.
- If the situation persists, we recommend taking your battery to a certified automotive service center for evaluation.

F03 — Internal Open Cell

Have battery checked by a certified automotive service center.

F04 — Overtime Condition

F04 appears when charging time exceeds 18 hours.

You may be using a charge current rate too low for a large battery. Select higher charge rate to charge the battery.

F05 — Overheated Condition

The ventilation grill that prevents the air from flowing in and out of the charger may be blocked.

- Follow the steps outlined in "Important Safety Instructions" at the front of this manual to disconnect AC cord and clamps, allow the unit to cool for 30 minutes and reconnect.
- Make sure there is ample ventilation before resuming operation.

Charging a Very Cold Battery

If the battery to be charged is very cold (in temperatures below freezing — 0°C/ 32°F), it cannot accept a high rate of charge. The initial charge rate will be low. The charge rate will increase as the battery warms. Never attempt to charge a frozen battery.